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Bering Glacier makes a break for the ocean

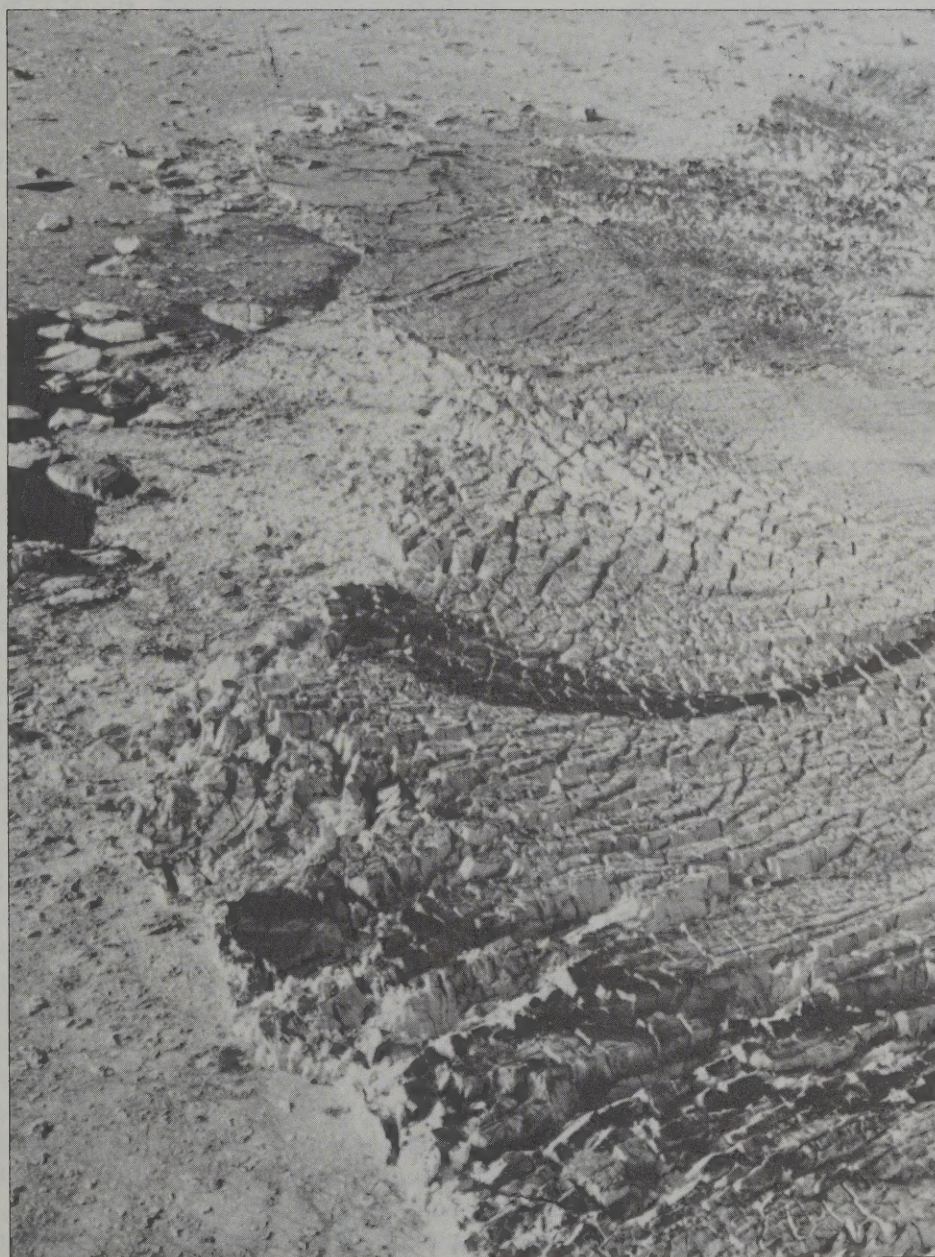
I N S I D E

A tremendous surge by Alaska's Bering Glacier has scientists wondering what's next

Working after school in RAPS program fits right in with student's plans for college

Workshop has resource professionals agreeing about benefits of wildfires in Alaska

A small BLM district office finds itself making some big changes



Bruce Molnia/USGS

The fractured, crevassed central terminus of the Bering Glacier. After the surge reached the terminus in late August, this part of the terminus rapidly advanced into Vitus Lake where icebergs calved from its face.

u.s. department of the interior • bureau of land management

Hey, he's still here!

RAPS student is first to continue working during school year



Dan Gullickson

Josh Sheppard and Steve Lundeen, a natural resource specialist with the BLM's Kobuk District, use a planimeter to determine acreages on a map. Sheppard is the BLM-Alaska's first RAPS student working after school hours during the school year.

Josh Sheppard is a familiar figure at the Bureau of Land Management building in Fairbanks. Most afternoons he's there, working on projects for the Kobuk District. Sheppard is working under the Resource Apprenticeship Program for Students. He is the first RAPS student to work with BLM-Alaska during the school year. Sheppard, an Alaska Native, grew up in the Fairbanks area.

"I want to go to college from here after I graduate from high school," Sheppard says.

The 18-year-old Howard Luke Alternative School student is highly motivated. He's worked two summers in the RAPS program, doing cadastral work in rural areas. Sheppard's first after-school work involved tracing acreage in the Squirrel River drainage for a draft environmental impact statement on a wild and scenic river study. He used a planimeter, a scientific instrument for measuring areas on maps, to determine acreages for the alternatives considered in the EIS.

Kobuk District Manager Helen Hankins said Sheppard will also help update a database for wildlife biologists, work on land status determinations with realty specialists, and do administrative work. He will receive one and a half high school credits for working with BLM.

"I think the RAPS program is very important.

This is the first time we've had a student working during the school year, and we hope it continues," Hankins said.

"I want to go to college from here after I graduate from high school," Sheppard says.

Josh has already started working on his college career by earning one credit from University of

"I think it's kind of exciting that UAF is recognizing the educational value that the RAPS program offers," says Jon Deininger, RAPS coordinator for Alaska. "It doesn't make college seem so formidable to high school students if they've already earned a college credit."

Alaska Fairbanks for his summer work in the RAPS program.

"I think it's kind of exciting that UAF is recognizing the educational value that the RAPS program offers," says Jon Deininger, RAPS coordinator for Alaska. "It doesn't make college seem so formidable to high school students if they've already earned a college credit."

Sheppard's position stems from a suggestion during a meeting with Denise Meredith, Deputy BLM Director who visited Alaska in September. The counselor at Howard Luke Alternative School told Meredith that meaningful work for students was hard to find and suggested that BLM have a RAPS student work after school hours. The Tanana Chiefs Conference provided funding through the Job Training Partnership Act and the Kobuk District agreed to set up the position.

After its eighth year, the Alaska RAPS is going strong. In 1994, RAPS provided 51 students with summer apprenticeships with 11 private, state and federal natural resource management agencies, said Deininger. Joining the RAPS partnership last year were the Alaska Department of Fish and Game, Camp Habitat and the Northern Alaska Environmental Center. In addition to Sheppard's position, RAPS-Alaska has also placed a winter apprenticeship the U.S. Fish and Wildlife Service. Both were funded by the Tanana Chiefs Conference.

"Without the support of TCC, we wouldn't be able to experiment with winter apprenticeships," adds Deininger.

—Andy Williams

About a dozen speakers at a recent Alaska Fire Service workshop said the effects of wildfire are widely beneficial, and that it should be allowed to play its natural role wherever possible.

"In reality, the only unwanted or harmful aspect of naturally occurring wildland fires is the threat to human life, private property and forest resources that we wish to retain for their commodity value," said Dale Haggstrom of the Alaska Department of Fish and Game.

Melanie Miller, fire ecologist with the BLM Division of Fire and Aviation Policy and Management in Boise, and Joan Foote, botanist at the Institute of Northern Forestry in Fairbanks, described the role that fire plays in the boreal forests.

Several speakers discussed recent research into the effects of fire on wildlife. Fire burns in mosaic patterns, they said, which provide for different stands of vegetation and sustain various species of wildlife.

Two U.S. Fish and Wildlife Service members said furbearers thrive in mixed stands of vegetation, whether burned or not, and prefer the edges of the mosaic patterns. Buddy Johnson of the Koyukuk/Nowitna Refuge and Larry Vanderlinden of the Tetlin Refuge described studies in their areas that indicated healthy populations of lynx, marten and other furbearers after fires.

Randi Jandt, wildlife biologist with the BLM's Kobuk District, said fire can improve winter habitat for moose. On the Kenai Peninsula, moose

It's not all bad— Workshop touts benefits of wildfires in Alaska

thrive on birch and aspen reproduction that sprouted after the Swanson River fire in 1969. However, in the Interior the preferred winter habitat is riparian willow thickets, near tall white spruce forests, that provide relief from deep snow and wind chill. Moose sometimes use upland burned areas during mid-winters.

Burning an area does not ensure quality moose habitat. "What you get before a fire is generally what you get afterwards," said Foote. "If you don't have any moose browse before a fire, you won't get it afterwards."

Lisa Saperstein, a USFWS biologist on the Koyukuk/Nowitna Refuge, said caribou feed primarily on lichen in the winter. Lichens are very slow-growing, and fire can remove forage in an area for 30-70 years. A study of habitat use in the first few years after a large fire near Selawik indicated caribou avoided burned areas, she said.

However, in the long term fire may have a positive effect on caribou lichens. Miller explained that on cold, wet sites, the rate of growth of old lichens can be very slow. Forage value is less than in younger stands of lichens, and they become overtopped by sphagnum moss. "So maybe a fire cycle of 150 years is natural and beneficial for lichen," she said.

Haggstrom said there is a growing public awareness of the beneficial role fire plays but that public opinion remains the greatest impediment to sound fire management. John Quinley, public affairs officer with the National Park Service in Anchorage, described an effort by a national task force to devise a program to educate people about fire and forest ecology. A curriculum for school children is being developed and other plans are in progress.

Roger Ottmar, a research forester with the Pacific Northwest Research Station in Seattle, discussed studies on the effects of smoke on firefighter health. Smoke produces many gaseous compounds, as well as particulates that are small enough to be taken deeply into lungs. While the studies indicate that firefighters are rarely exposed to levels of smoke that exceed federal standards on a 24-hour average, levels can be exceeded for some emission products on a short-term basis, he said.

—Andy Williams

After the fire...

Most wildfires in Alaska occur on black spruce sites, which burn more readily than sites dominated by white spruce or deciduous trees. Fire kills the black spruce and consumes some of the thick moss/lichen mat and soil organic layer. Surviving plant regenerating structures such as roots and rhizomes produce new shoots. Any exposed mineral soil provides excellent seedbed for most species. Reduced shade and reduction of the insulating layer causes warmer soil temperatures and melting of permafrost. A deeper rooting zone and faster rates of soil nutrient cycling result, making more nutrients available for plants. As the amount of vegetation cover increases, and the moss/lichen layer thickens, soil temperatures and depth to permafrost decrease, and site productivity eventually declines to what it was before the fire occurred.

Galloping glacier heads for ocean

Scientists gather in southeast Alaska to observe glacier's surge



Close-up of the fractured and sinuously crevassed surface of Bering Glacier northeast of the Grindle Hills. (Photos by Bruce Molnia, USGS)

Torrents of black-gray water gushed forth from a small hole in the crystal blue-and-white face of the seemingly peaceful glacier. Turbulent, angry water escaped from centuries of captivity, tearing away warehouse-sized chunks of ice and rolling them downstream like so many miniature bowling balls. The Bering Glacier in the Bureau of Land Management's Glennallen District was on the move in a big way this summer and scientists from across the country came to study it.

"It was just awesome," said Rachel Corbray, BLM fisheries biologist Cooperative Education student from the University of Washington. When you're talking about the Bering Glacier, "awesome" is a word that is used over and over again.

"I had never been west of the Mississippi River, and I found it so awesome—I just wasn't looking at the glacier in the same way as the scientists were," commented Bill Reckert, photographer for the U.S. Geological Survey, who traveled from Reston, Virginia with Bruce Molnia, geologist and project director for studies being conducted by the USGS. BLM wildlife biologist John Payne added, "I think this latest surge is one of the most significant, well-documented events in North America. There are some things going on there

that have never been seen before—like the 40 to 50-ton seracs (ice towers) shooting 300 feet high due to the increased stress and pressure in the glacier."

The 145-mile-long Bering is the largest glacier in North America, extending from the Bagley ice fields in Canada, through the Wrangell-St. Elias National Park, to within one mile of the Gulf of Alaska. Its largest lobe is some 126 miles long and about 30 miles wide.

The Bering Glacier has exhibited periodic surges and retreats within historic times, averaging 20-25 year intervals. The most extensive surges occurred between 1900 and 1902 when the glacier advanced to within one-half mile of becoming a tidewater glacier in the Gulf of Alaska. At some time in the distant past when water levels were lower, the glacier reached much farther south, as proven by an underwater trough now extending more than 1,500 feet out beneath the ocean.

In this latest surge, so much ice moved so quickly "downstream" that observers were able to find evidence where the glacier had actually pulled away from its headwalls, leaving a noticeable "bath tub ring" 100 miles away at the upper end. "Before this latest surge, the glacier was moving about one to two feet a day," says Molnia. "It speeded up to an average 100 feet a day, with occasional speeds of 300 feet a day." Scientists believe the glacier moves so quickly because a layer of water builds up, separating the ice from the land and allowing the ice to slide downhill.

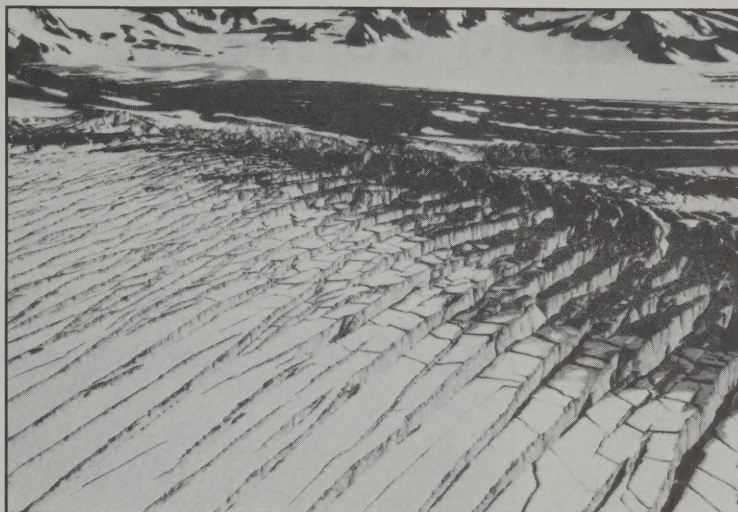
Meanwhile, down at the face of the glacier, the advancing ice wreaked havoc on anything in its way. Emerald green Vitus Lake, once fifteen miles long and seven miles wide, is all but gone, choked with ice and heavy glacial silt from the advancing glacier. Berg Lake, blocked from its outlet to the sea by some of the 30 million tons of ice that were calving every day, backed up with water until the ice dam ruptured, causing a 72-hour catastrophic flood. No one witnessed this event, but clues to the powerful forces at work were found in the house-sized icebergs left stranded where a 270-foot deep lake used to be.

"We found two moose carcasses; if the flood had occurred in September or October, we think there could have been as many as 100 hunters in the area," said Payne. Scientists are also wondering how the glacier will affect the habitat and climate in the Copper River delta where dusky Canada geese nest each summer. "These dusks are the

only large concentration of the species in North America. Their population is down to about 7,000 birds and they may become listed as a threatened species in the future as more information becomes available," said Payne. "About 400 of the geese were found wandering around on islands that were created by the flooding in July. We want to check some 1991 aerial photography to find out what they were doing before the surge," he added.

In late September a large "blow out" released enough water trapped under the glacier to allow the glacier to settle down on solid ground, ending the surging for the moment. The extent and amount of scientific information collected since 1900 has made the Bering Glacier one of the most studied glaciers in North America.

Many federal agencies have established research programs around and on the glacier. At one point, USGS obtained low level aerial photo coverage every 30 days. Cameras also have been installed at ground level for time lapse photography. NASA runs synthetic aperture radar monthly to track ice movements, and two recent space shuttle missions carried special equipment to photograph the glacier. The glacier surges are also of interest to the National Park Service, State



Southeasterly view across the Bering Glacier towards the Grindle Hills. The glacier's surface in the near and middle ground displays a stair-step pattern of fracturing and crevassing resulting from the ongoing surge of the glacier. Rates of ice movement in this area are about 25 meters per day.

of Alaska, University of Alaska, and the National Oceanic and Atmospheric Administration.

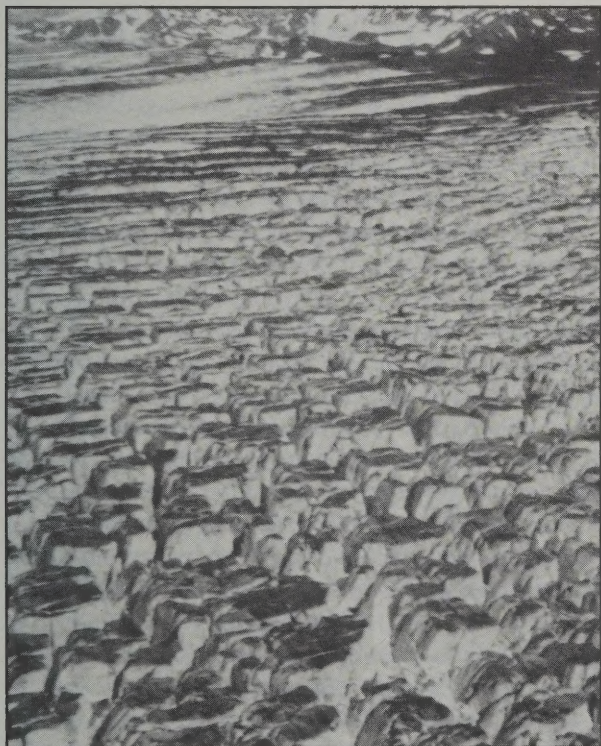
Payne was one of 6,000 people who attended the American Geophysical Union Conference in San Francisco in December. He reported that 14 scientific papers were presented on the Bering Glacier, nearly all of which focused on its physical aspects, and predicted, "The Bering is likely to become a highly significant data collection area for glacial research into the next century."

Researchers at the conference speculated that the forelands will be breached and a new fjord will be formed within the next 10 years that may rival the size of Icy Bay. Payne says, "This is a benchmark opportunity to document successional events, similar to the scientific opportunities afforded by Mt. St. Helens. The changes that are occurring to soils, plants and animals around the Bering Glacier have no equal in the world."

All this ice movement has had an impact on the small but growing recreational activity in the area, said BLM outdoor recreation planner Paul Boos. The glacier is not safe to land a plane on so climbers and hikers must go elsewhere. In recent years, Berg and Vitus lakes had become popular with kayakers, and several guiding services have had to cancel operations in the area.

"Hunters, anglers and any other recreationists must use extreme caution if they go roaming around the areas between the glacier and the ocean. We recommend that they stay out of the area until things calm down some more," said Boos.

—Ed Bovy



Close-up of the heavily fractured, prismatic and rectangular blocks on the surface of Bering Glacier in the east-central region, near the Grindle Hills. Clearly seen are columns and rows of rectangular prisms.

Ausgezeichnet! BLM sign shows up in Germany



BLM interpretive specialist Sue Steinacher found this poster on a wall in Dresden, Germany. It shows the BLM sign marking the Arctic Circle on the Dalton Highway.

The poster on the wall in downtown Dresden, Germany looked familiar. It showed a person with a bicycle posed in front of a sign that read "Arctic Circle."

Sue Steinacher, interpretive specialist with the the Steese/White Mountains District in Fairbanks, clapped her hands to her face and dropped her jaw. It was the Bureau of Land Management sign on the Dalton Highway in Alaska.

"I just stood there and looked and laughed. I didn't care who saw me. I was so surprised to see this sign from another place and time," Steinacher said.

The sign is well-known to travelers of the Dalton Highway. Installed by the Arctic District in 1992, it marks the Arctic Circle at 66° 33' North Latitude, about 60 miles south of Coldfoot. The design by former BLMers Jan Burris and Marin Kuizenga received a national award for excellence in interpretive media.

Steinacher came upon the poster in late October while traveling. The poster advertised an appearance by the person with the bicycle, who had traveled the length of the Americas with it.

"It shows that the work we do has wider ranging effects than we realize," she said. "It can show up in places we wouldn't imagine."

—Andy Williams

Alaska conference covers high-tech shoptalk

Federal telecommunications professionals in Alaska from the military, federal agencies, the University of Alaska, and private industry shared information on the latest developments in their fields at a first-of-its-kind conference in Fairbanks. Deborah Williams, Special Assistant to the Secretary of the Interior for Alaska, said it was critical that federal telecommunication professionals keep on the cutting edge of technology, and work productively with the private sector and other federal agencies.

Presentations were made on topics such as interagency shared radio communications, the future of telecommunications, and information on the latest technology in commercial communications. Several vendors provided information on cellular telephones and technology for the future.

Paul Burke of the Alaska State Troopers discussed the Personal Locator Beacon program. The PLB is a transmitter the size of a small hand-held radio. When activated due to a life threatening condition, it transmits to polar-orbiting satellites both the location and identity of the individual. This data is sent to a computer in Maryland and then relayed to the Alaska State Troopers. Burke

said the PLBs can save lives and significantly reduce both the cost of rescue operations and the risk to the search and rescue community.

Staff at the University of Alaska Fairbanks supercomputer facility demonstrated Mosaic, a software application that allows entry into the worldwide computer network through Internet. This capability will have significant impact for communications between distant education systems.

UAF staff also showed a computer model of the ash cloud from Mount Redoubt and a simulated cockpit view from a commercial jetliner that lost all four engines after entering the ash cloud. The airplane dropped more than two miles before the pilot restarted the engines. The volcanic ash cloud modeling could show locations of ash clouds, which can't be seen by pilots—just one of the many uses of the supercomputer, they said.

Barker said participants identified areas of apparent duplication and discussed sharing of facilities among agencies for cost effectiveness. "The participants from private industry also identified areas in which commercial services could substantially reduce government expenditures," she said.

—Andy Williams

In the middle of Alaska there is a small community, not a town really, but a community of people who live and work together to get through the rigors of life in the bush. In this community there is a Bureau of Land Management District Office that is quietly setting a precedent in the world of government.

Since July of 1994, the Glennallen District Office for the BLM has been a self-directed team. They were not formed to solve a special set of problems but to develop a new approach to business.

When a retirement buy-out hit last spring the Glennallen office found itself in a unique and difficult position: the district manager was leaving, there was a personnel freeze on and the field season was just getting started. Finding a new manager would take most of the summer and work still had to get done. Looking at the Vice-President's National Performance Review and the difficulties in filling the position, Alaska State Director Tom Allen decided to take a chance. After going through a short period of acting district managers the Glennallen District Office was asked the big question: "Would you like to become a self-managing team?"

Realizing that good deals are rarely what they seem, the Glennallen office asked for more information and received it in the form of E.K. James. James is a Washington Office BLM trainer who specializes in providing interested groups with current information on self-directed teams and reinventing government. He spent a full week in Glennallen taking the office staff through the self-directed process and answering questions. Perhaps the most important piece of information James gave was his warning, "You are opening a hornet's nest. No matter what you decide at the end of this week you will never look at the way you do business the same way again." He was right.

The Glennallen District staff decided to become a self-managing team. They have the full range of responsibilities and duties as any other district with five million acres of federal land to manage. The office revolves around five campgrounds, two wild and scenic river corridors, one of the nation's largest producing gold mines, the Alaska Native Claims Settlement Act, federal subsistence hunting issues, one of Alaska's most productive salmon runs, and 60,000 visitor days of tourists.

While dealing with the topics of day-to-day work, the team also faces the decisions of day-to-day management. Besides reinventing government at a local level the team must also re-educate their peers. Other offices within the Bureau and the Department of the Interior had to learn how to deal with a team instead of one manager. The question

THE QUIET PLACE

remains, "Has it been worth it?"

In the team's opinion, a resounding "Yes!" Peers are now starting to understand the person they're dealing with can make a decision. Snickers have been replaced by questions.

How has this affected the office? Three items come to mind:

Requisitions no longer need two different signatures. The requisitioner can also now be the approving official.

No receipts and immediate payment make it easier to keep volunteers happy and programs moving.

And because the team, not a district manager, must now ensure that personnel can be held responsible for the duties and responsibilities they've accumulated over the years, an active role is being taken in updating personnel information.

More important is the perception of the team outside of the District Office. Responses are mixed and range from applause to dismay. Some members of the public still want to have an ear to chew on; they feel uncomfortable with the idea of "an empowered government employee." Others feel that the team is a "loose cannon" doing whatever they want, whenever they feel like it.

However, when the perceptions and biases are swept aside and the individual looks at facts, it all comes down to better decision making, an overall faster response, and a better way of doing business. Not everyone feels comfortable with the fact that decisions come so quickly and many are still trying to adapt to the speed with which a decision can be made.

In the quiet place of Glennallen, Alaska, a small BLM office has demonstrated the principle of synergy. The whole is reacting faster and better than the sum of the parts. While it's not always comfortable, it has started many thinking about the direction of the future.

—KJ Mushovic

frontier flashes

Almost 80,000 acres within the boundaries of Kenai Fjords National Park have been selected by two Native village corporations to fulfill land entitlements granted under the Alaska Native Claims Settlement Act (ANCSA).

The selections will cover most of the Kenai Fjords outer coast from Nuka Bay to Aialik Bay. Some small islands within the Alaska Maritime National Wildlife Refuge are included in the selections.

The two villages, Port Graham and English Bay, made selections along the Kenai Fjords coast under provisions of ANCSA and the Alaska National Interest Lands Conservation Act (ANILCA).

English Bay has been in negotiations with the Bureau of Land Management and National Park Service over the past several years over the boundaries of some of their selected lands.

The agreement was signed by Secretary of the Interior Bruce Babbitt in Washington, D.C., and BLM is working to formalize the land selections. An Interim Conveyance will be issued to both village corporations, which will effectively pass the land title.

A new information tool, called **Habitat Inventory and Evaluation Software**, will assist in natural resource issues affecting migratory waterfowl. The technology uses satellite imagery to generate large scale information to identify wetlands and waterfowl habitat areas.

Use of this refined Geographic Information System (GIS) technology will allow natural resource agencies and private businesses to rapidly identify and quantify wetlands and waterfowl areas in both field and office settings. This latest use of GIS technology will function in currently available software platforms, making it immediately useful to a wide range of existing programs.

In 1991 refinement of the software began in the Black River area of Alaska by using location information from Global Positioning Systems (GPS) to increase mapping accuracy. Application of the software, with inclusion of the GPS and the addition of a custom data collection form that standardized field techniques, was used near Lake Iliamna, Alaska in 1992. In 1994 a full capability test covered some eight million acres in the National Petroleum Reserve on

Alaska's north slope. The work at NPR-A also provided an opportunity to test new computer hardware that links the satellite image to GPS locations while being mobile in a helicopter.

The comment period for proposed rules governing R.S. 2477 rights-of-way was extended until August 1, 1995. The proposal was published August 1, 1994, for public comment.

R.S. 2477 is a provision of the Mining Law of 1866 that said that "the right of way for the construction of highways over public lands not reserved for public uses is hereby granted." Although Congress repealed the statute in 1976, it did not terminate rights-of-way in existence at that time. The problem has been the lack of a process and standards for determining when valid rights-of-way do exist. Public land users and managers have sought an end to the uncertainty, and in 1992 Congress asked the Secretary of the Interior to study the problem and recommend a solution. In 1993, the Secretary issued a report to Congress recommending the rulemaking now under way.



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